PRESCRIBING INFORMATION

©MERSYNDOL® with codeine
(acetaminophen 325 mg, codeine phosphate 8 mg and doxylamine succinate 5 mg)
Analgesic, Antihistamine
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NAME

@MERSYNDOL with codeine

DRUG

Acetaminophen / Codeine phosphate / Doxylamine succinate

THERAPEUTIC CLASSIFICATION

Analgesic, antihistamine

ACTIONS

Acetaminophen

Acetaminophen, also known as paracetamol, is the major metabolite of phenacetin and acetanilid.

Acetaminophen is an effective and fast-acting analgesic which acts centrally to relieve mild to moderate pain.

Acetaminophen is an analgesic and antipyretic agent, similar in potency and efficacy to salicylates.

Like the salicylates, acetaminophen reduces fever by a direct effect on the heat-regulating centers to increase dissipation of body heat.

Unlike the salicylates, acetaminophen does not have uricosuric activity and does not affect acid base balance in normal therapeutic doses. Acetaminophen does not interfere with hemostasis and does not inhibit platelet aggregation.

Allergic reactions are rare with acetaminophen but have occurred. Patients with salicylate induced urticaria or angioedema can suffer cross reactivity with acetaminophen (please see WARNINGS and PRECAUTIONS).

Acetaminophen is rapidly and completely absorbed from the gastrointestinal tract. Food intake delays acetaminophen absorption.
Approximately 85%-90% of the administered dose is recovered from the urine in 24 hours. Less than 5% is excreted unchanged, the balance being conjugated principally to the glucuronide or sulfate.

Peak plasma concentrations of the free and conjugated drug are achieved 1/2 to 2 hour after oral administration. The elimination half-life varies from 1 to 4 hours.

Small amounts of acetaminophen are normally converted to a highly reactive metabolite by hepatic microsomal enzymes. At therapeutic doses, the small amounts of the active metabolite so formed are rapidly inactivated by hepatic glutathione and removed by renal excretion.

However, where hepatic glutathione has been rapidly depleted by a large dose of acetaminophen, covalent binding of the metabolite to liver-cell macromolecules occurs and is presumed to be responsible for the hepatic cell necrosis.

Prompt administration of acetylcysteine is indicated to prevent acetaminophen induced hepatic necrosis in the treatment of overdosage (see OVERDOSE section).

**Codeine phosphate:**

Codeine phosphate is an effective oral analgesic which provides relief from mild to moderate pain. Codeine alters processing affecting both the perception and emotional responses to pain. Codeine also exerts antitussive action by directly depressing the cough centre.

The abuse potential of codeine is lower than that of other opiates.

Codeine is well absorbed from the gastrointestinal tract after oral administration.

Codeine is mainly metabolized by glucuronidation to codeine-6-glucuronide. Minor routes of metabolism include O-demethylation leading to morphine, N-demethylation to norcodeine and both O- and N-demethylation to normorphine. Morphine and norcodeine are further transformed to glucuronide conjugates. Unchanged codeine and its metabolites are mainly excreted by urinary route within 48 hours (84.4±15.9%). The O-demethylation of codeine in morphine is catalyzed by the cytochrome P450 isozyme 2D6 (CYP2D6) which shows genetic polymorphism that may affect the efficacy and toxicity of codeine. Genetic polymorphism in CYP2D6 leads to ultrarapid, extensive and poor metaboliser phenotypes.

**Doxylamine succinate**

Doxylamine belongs to the ethanolamine class of antihistamines with sedative properties. Its sedative effect is useful in reducing the restlessness and allaying the anxiety which can perpetuate or increase pain.
It has antinauseant and antiemetic activity. Its anticholinergic effects tend to lessen rhinorrhea.

Doxylamine has a half-life of approximately 9 hours.

**INDICATIONS**

MERSYNDOL with codeine is indicated in patients older than 12 years of age for relief of headaches, cold symptoms, muscular aches and pains.

**CONTRAINdications**

- Hypersensitivity to acetaminophen, doxylamine, codeine or other opioids.
- Pre-existing respiratory depression, asthma or other chronic lung diseases.
- During last trimester of pregnancy or breastfeeding (see WARNINGS AND PRECAUTIONS, Special Populations, Pregnant Women and Nursing Women)
- Risk of blocked intestines
- Head injury
- Seizures
- Glucose-6-phosphate-dehydrogenase deficiency
- Patients for whom it is known they are CYP2D6 ultra-rapid metabolisers
- Children (aged below 18 years) who undergo tonsillectomy and/or adenoidectomy to treat obstructive sleep apnea, as these patients are more susceptible to respiratory adverse reactions

**WARNINGS AND PRECAUTIONS**

**General**

Both doxylamine and codeine may cause drowsiness in some patients. Patients should be cautioned not to operate vehicles or hazardous machinery until their response to the drug has been determined. Avoid alcohol.
In ultra-rapid opiate/codeine metabolisers, there is an increased risk of developing opioid toxicity even at low doses. Prevalence of CYP2D6 ultrarapid metabolisers differs according to racial and ethnic group and has been estimated at 1.2% to 2% in Asians, 1% to 6.5% in Caucasians, 3.4% to 6.5% in African Americans, and 29% in African/Ethiopians. Symptoms of opioid toxicity include nausea, vomiting, constipation, lack of appetite and somnolence. In severe cases this may include symptoms of circulatory and respiratory depression.

**Gastrointestinal**
Codeine phosphate may cause constipation.

**Hematologic**
Agranulocytosis may occur with acetaminophen (see ADVERSE REACTIONS section).

**Hepatic/Biliary/Pancreatic**
Hepatotoxicity may occur with acetaminophen even at therapeutic doses, after short treatment duration and in patients without pre-existing liver dysfunction (see ADVERSE REACTIONS and DRUG INTERACTIONS).

**Immune**
Allergic reactions are rare with acetaminophen but have occurred. Patients with salicylate induced urticaria or angioedema can suffer cross reactivity with acetaminophen.

**Psychiatric**
Products containing codeine should not be given for prolonged periods. Codeine may be habit-forming.

**Renal**
Papillary renal failure may occur with acetaminophen (see ADVERSE REACTIONS section).

**Respiratory**
In patients with asthma or pulmonary emphysema, indiscriminate use may precipitate respiratory insufficiency resulting from increased viscosity of bronchial secretions and suppression of the cough reflex (see CONTRAINDICATIONS). Codeine is not recommended for use in children in whom respiratory function might be compromised.

Use with caution in sedated or debilitated patients, in patients who have undergone thoracotomies or laparotomies, since suppression of the cough reflex may lead to retention of secretions postoperatively in these patients.

Caution is advised in patients with underlying sensitivity to aspirin and/or to non-steroidal anti-inflammatory drugs (NSAIDs).
**Skin**
Severe cutaneous adverse reactions (SCARs): Life-threatening cutaneous reactions Stevens-Johnson Syndrome (SJS), and Toxic Epidermal Necrolysis (TEN) have been reported with the use of acetaminophen. Patients should be advised of the signs and symptoms and monitored closely for skin reactions. If symptoms or signs of SJS and TEN (e.g. progressive skin rash often with blisters or mucosal lesions) occur, patients should stop immediately MERSYNDOL with codeine treatment and seek medical advice.

**Special Populations**

**Pregnant Women**
No data are available on the use of MERSYNDOL with codeine during pregnancy. Safe use in pregnancy has not been established in human studies; therefore, this medication should not be used during pregnancy unless, in the opinion of the prescribing doctor, the potential benefits outweigh the potential risks.

There have been no observations of an increase in the frequency of malformations or other direct or indirect harmful effects on the foetus in pregnant women and women of child-bearing age who have taken acetaminophen and doxylamine.

There is inadequate evidence of safety of codeine in pregnancy. Since codeine phosphate crosses the placental barrier, its use in pregnancy is not recommended.

Codeine may cause respiratory depression and withdrawal syndrome in neonates born to mothers who use codeine during the third trimester of pregnancy. As a precautionary measure, use of MERSYNDOL with codeine should be avoided during the third trimester of pregnancy and during labor (see CONTRAINDICATIONS).

**Nursing Women**
MERSYNDOL with codeine is contraindicated during breastfeeding (see CONTRAINDICATIONS section). Acetaminophen and codeine are excreted into human breast milk. Codeine is partially metabolized by cytochrome P450 2D6 (CYP2D6) into morphine, which is excreted into breast milk. If nursing mothers are CYP2D6 ultra-rapid metabolisers, higher levels of morphine may be present in their breast milk. This may result in symptoms of opioid toxicity in both mother and the breast-fed infant. Life-threatening adverse events or neonatal death may occur even at therapeutic doses (see WARNINGS and PRECAUTIONS, General section).

**Patients with hepatic and renal impairment**
MERSYNDOL with codeine should be used with caution in severe hepatic or renal dysfunction.
ADVERSE REACTIONS

Acetaminophen:

The incidence of gastrointestinal upset is less than after salicylate administration.

Hepatic toxicity has been associated with acetaminophen. Non-fatal hepatic damage is usually reversible. Cytolytic hepatitis, which may lead to acute hepatic failure have been reported. The chronic ingestion of alcohol may be implicated in the increasing potential for hepatic toxicity. In patients with compromised liver function, acetaminophen could exacerbate liver insufficiency.

There have been reports of kidney damage. Papillary renal failure has been reported following large amount of acetaminophen. There have been no authenticated reports of renal papillary necrosis with therapeutic doses of acetaminophen alone. Renal insufficiency may occur as an effect secondary to liver failure.

Changes in blood picture (rarely thrombocytopenia, neutropenia, leucopenia and, in isolated cases, pancytopenia) may occur. There have been reports agranulocytosis, thrombocytopenic purpura, methemoglobinemia and hemolytic anemia in patients with underlying glucose 6-phosphate dehydrogenase deficiency.

Rarely, asthmatic attacks and bronchospasm have been reported.

Skin rashes and fixed dermatitis with pruritus (erythema, urticaria) have been reported. Toxic epidermal necrolysis (TEN), Stevens-Johnson Syndrome (SJS), acute generalized exanthematous pustulosis, fixed drug eruption have been rarely reported (see WARNINGS AND PRECAUTIONS).

Anaphylactic shock, angioedema, difficulty in breathing and drop in blood pressure have also been reported.

Kounis syndrome (allergic angina/allergic myocardial infarction) has been reported.

Codeine phosphate:

Adverse reactions due to codeine phosphate may include drowsiness, nausea, vomiting and constipation. Infrequent adverse effects include palpitation, pruritus and, rarely, hyperhidrosis and agitation have been reported.

Very rare occurrence of pancreatitis has been observed.
Respiratory depression is seen in the higher dosage and habituation or true addiction should be guarded against.

**Doxylamine succinate:**

Drowsiness, vertigo, nervousness, epigastric pain, headache, palpitation, diarrhea, disorientation, irritability, convulsions, urinary retention, or insomnia have been reported.

Other infrequently observed side effects with MERSYNDOL with codeine are anorexia, depression, dizziness, dry mouth and sweating.

**DRUG INTERACTIONS**

Since the depressant effects of antihistamines and codeine are additive to those of other drugs affecting the CNS, patients should be cautioned against drinking alcoholic beverages or taking tranquilizers, hypnotics, sedatives, psychotherapeutic agents or other drugs with CNS depressant effects.

The risk of acetaminophen toxicity may be increased in patients receiving other potentially hepatotoxic drugs or drugs that induce liver microsomal enzymes, such as certain antiepileptics (such as phenobarbital, phenytoin, carbamazepine, topiramate), rifampicin and alcohol. The induced metabolism results in an elevated production of the hepatotoxic oxidative metabolite of acetaminophen. Hepatotoxicity will occur if this metabolite exceeds the normal glutathione binding capacity.

Acetaminophen may increase the risk of bleeding in patients taking warfarin and other antivitamin K. Patients taking acetaminophen and antivitamin k should be monitored for appropriate coagulation and bleeding complications.

Acetaminophen may considerably slow down the excretion of chloramphenicol, entailing the risk of increased toxicity.

When used concurrently with zidovudine, an increased tendency for neutropenia may develop. Combination of MERSYNDOL with codeine and zidovudine should be avoided.

Concurrent intake of drugs which delay gastric emptying may slow down the uptake of acetaminophen, thereby retarding its onset of action. Conversely, drugs which accelerate gastric emptying, such as metoclopramide, may accelerate the uptake of acetaminophen and its onset of action.
**SYMPTOMS AND TREATMENT OF OVERDOSAGE**

**Symptoms of overdosage**

**Acetaminophen:**

Nausea, vomiting, anorexia, pallor, sweating, abdominal pain, generally appear during the first 24 hours of overdosage with acetaminophen. This initial period is frequently followed by an asymptomatic phase after which hepatic damage may become evident.

Increased levels of hepatic transaminases, lactate dehydrogenase and bilirubin with a reduction in prothrombin level can appear 12 to 48 hours after acute overdosage.

Overdosage with acetaminophen may cause hepatic cytolysis which can lead to hepatocellular insufficiency, jaundice, gastrointestinal bleeding, metabolic acidosis, hypoglycemia, encephalopathy, myocardial damage, cardiomyopathy, coma and death. It can also lead to pancreatitis, acute renal failure and pancytopenia.

Factors contributing to an accurate evaluation of toxicity include: the amount of drug ingested and more significantly, the serum acetaminophen concentration measured optimally, after 4 hours of ingestion. When serum determinations of acetaminophen are above 990 µmol/L at 4 hours, above 460 µmol/L at 8 hours or above 260 µmol/L at 12 hours following the estimated time of ingestion, the patient is at risk of liver damage and antidotal therapy should be instituted immediately.

An additional reliable indicator of possible hepatic injury is the serum half-life. The normal half-life of acetaminophen in a healthy adult is approximately 2 hours. If the serum half-life exceeds 4 hours, it can be assumed that hepatic necrosis will occur; if the half-life exceeds 12 hours hepatic coma is a likely possibility.

**Codeine phosphate:**

Symptoms: May result in euphoria, dysphoria, visual disturbances, hypotension and coma or death from respiratory depression.

In an evaluation of codeine intoxication in children, symptoms ranked by decreasing order of frequency included: sedation, rash, miosis, vomiting, itching, ataxia and swelling of the skin. Respiratory failure may occur. Blood concentrations of codeine ranged from 1.4 to 5.6 µg/mL in 8 adults whose deaths were attributed primarily to codeine overdosage.

**Doxylamine succinate:**

Symptoms: Dryness of mouth, dilated pupils, sleepiness, vertigo, mental confusion, restlessness or tachycardia.
Reactions associated with doxylamine succinate overdosage may vary from central nervous system depression to stimulation. Stimulation is particularly likely in children; insomnia, nervousness, euphoria, irritability, tremors, nightmares, hallucinations and convulsions can occur. Atropine-like signs and symptoms; dry mouth; fixed, dilated pupils; flushing; and gastrointestinal symptoms may also occur.

**Treatment of overdosage**

N-acetylcysteine is an antidote to acetaminophen and Naloxone is a narcotic antagonist.

For management of a suspected drug overdose contact your regional Poison Control Centre.

**DOSAGE**

Adults and children over 12 years: 1 - 2 tablets every 4 to 6 hours as required. Do not exceed 12 tablets in a 24-hour period.

**AVAILABILITY**

White, flat-faced, bevelled-edged tablet with stylized “S” embossed on one side. The tablet is round and contains: 325 mg acetaminophen; 8 mg codeine phosphate; 5 mg doxylamine succinate.

Non-medicinal ingredients: croscarmellose sodium, magnesium stearate, microcrystalline cellulose, pregelatinized starch, povidone and silicon dioxide.

Bisulfites-, gluten-, lactose-, parabens- and tartrazine- free.

Available in blister packs of 24, and HDPE bottles of 100 tablets.
INFORMATION FOR THE PATIENT

© MERSYNDOL® with codeine
Contains acetaminophen, codeine phosphate, doxylamine succinate

Analgesic, Antihistamine

Uses: For relief of headaches, cold symptoms, muscular aches and pains.

THIS PREPARATION CONTAINS CODEINE AND SHOULD NOT BE ADMINISTERED TO CHILDREN EXCEPT ON THE ADVICE OF A PHYSICIAN OR DENTIST.

Warnings:

ADULT USE AND CHILDREN OVER 12 YEARS OF AGE ONLY. DO NOT take more than the recommended dose. Use the smallest effective dose. Taking more than the maximum daily dose may cause severe or possibly fatal liver damage.

Do not use with other drugs containing acetaminophen, codeine and doxylamine succinate.

KEEP OUT OF THE SIGHT AND REACH OF CHILDREN. This package contains enough drug to seriously harm a child.

Do not take if you:
- are allergic to acetaminophen, doxylamine, codeine or other opioids
- have difficulty breathing, asthma or other chronic lung disease
- have suffered head injury
- are at risk of blocked intestines
- suffer from seizures
- are in your last trimester of pregnancy or nursing. Codeine may cause serious harm to a breastfed baby

Ask a doctor or a pharmacist before use if you:
- have chronic alcoholism
- have a serious liver or kidney disease
- are taking other medications that can make you sleepy or less alert, for example: narcotic analgesics or sedating antihistamines, or you are currently taking anti-depressants, other prescription drugs or natural health products or 3 or more alcoholic beverages per day, or if you have recently had surgery under general anaesthesia.
- have glaucoma, or difficulty in urination due to enlargement of the prostate gland
Consult a doctor if:
- you develop allergic reactions such as wheezing or itching
- your symptoms last for more than five days
- you feel sedated or drowsy, confused, have shallow breathing or severe constipation
- you develop skin reactions such as rash, blisters, or other skin reactions. You should stop taking this medicine and see a doctor.

This medication may cause drowsiness. If affected do not drive or operate machinery.

In Case of Overdose: call a Poison Control Centre or doctor immediately, even if you do not notice any signs or symptoms. Within the first 24 hours you may experience increased sweating, nausea, vomiting, stomach pain, and loss of appetite.

Medicinal Ingredients: Each tablet contains: acetaminophen 325 mg (analgesic); codeine phosphate 8 mg (analgesic), doxylamine succinate 5 mg (antihistamine).

Dosage: Adults and children over 12 years: 1 or 2 tablets every 4-6 hours as required. To be used only on the advice of a physician. Do not exceed 12 tablets in 24 hours unless advised by a doctor.

Non-medicinal ingredients: croscarmellose sodium, magnesium stearate, microcrystalline cellulose, pregelatinized starch, povidone and silicon dioxide.

Storage: Store between 15°C and 30°C.

Prescribing Information available upon request or at www.sanofi.ca

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